BEMAG.ca

TRANSFORMER

BEMAG TRANSFORMER

Company profile

Bemag Transformer is committed to customer service, product quality and affordability.

Located in Farham Quebec, Bemag Transformer produces the highest quality products:

- Employees—qualified employees have the knowledge, expertise and commitment to provide outstanding products and service
- Automation—costs are kept low and service is personalized through a unique automated process unheard of in the transformer industry
- Quality Control—each product that leaves the factory undergoes vigorous testing and inspection

Efficiency and Services

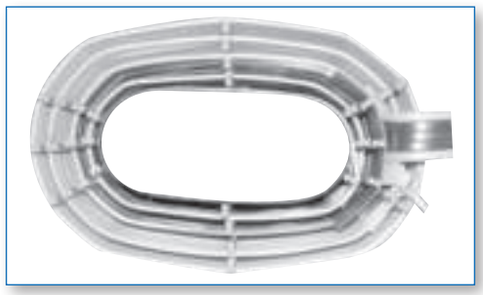
With total automation of customer service, engineering, and production, Bemag Transformer is able to meet customer needs effectively and accurately.

Quality

With our Quality Management System, Bemag's employees focus on team work and quality. At every step of production—winding, stacking, assembly welding, and testing—every employee is responsible that all products meets or exceeds the quality standards set out in industry regulations. Furthermore our quality is backed up by automated process control and our Quality Assurance team.

WHY CHOOSE BEMAG TRANSFORMER

- Bemag Transformer offers energy efficient transformers generating low losses.
- Transformers can be specifically designed for all custom type loads.
- All transformers are available in copper and aluminum.



OVOID SHAPED WINDINGS

Ovoid shaped winding provides unique advantages:

- Improved filling of the core inside the windings
- The risk of short circuits is minimized by reducing the stress in the conductor (no sharp corners compared to rectangular shaped windings)

STACKED LAMINATIONS

Superior technology of core assembly:

- Isolated bolts through the entire core, a unique design in North America that provides years of trouble-free operation. Laminations do not loosen up over time (loose laminations can cause humming).
- Progressive step lapping of all units reduces core losses and noise.
- Flexibility in manufacturing so that we can build custom transformers with special dimensions, impedance or any other specifications to meet your specific needs.

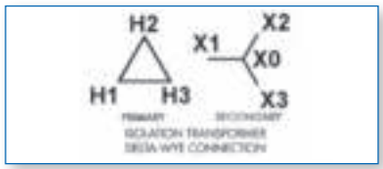
EPOXY IMPREGNATION

In order to provide our customers with the highest quality product, epoxy impregnation provides excellent bonding strength. Assemblies have a temperature rating of 220°C.

THREE COILS DESIGN

All of our three-phase transformers use the industry standard three coil design:

- Standard delta/wye connection—for isolation transformers
- Wye/wye—for auto-transformers (not open delta)



NEMA 3R ENCLOSURE

All Bemag Transformer enclosures are standard Nema 3R

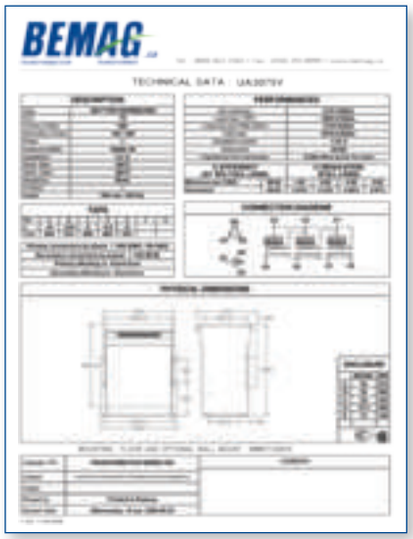
- Removable free brackets on request for wall mounting 75KVA units (3 phase) and less, or 50 KVA units (1 phase) and less. (See last page of this brochure for details)
- Designed for maximum air flow through the windings.
- Enclosures are treated with epoxy powder paint (ASA 61 gray).

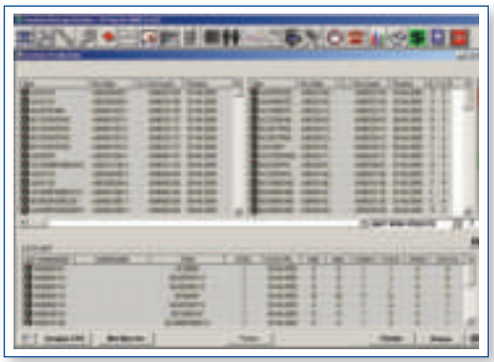
OTHER CHARACTERISTICS

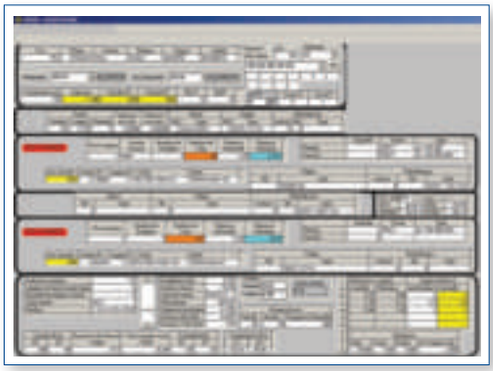
- Taps of 2 - 2½% FCAN, 2 - 2½% FCBN for most of the models.
- Connectors supplied for every unit, refer to data sheets for sizes.
- UL listed or CSA certified.

COMPUTER AUTOMATION

At Bemag Transformer, customer service, engineering, and production are totally automated. Therefore, Bemag Transformer is able to quickly and accurately enter orders and provide customers with their status. Our automated system tracks every step of production. When you enquire about a delivery date, we are able to tell you immediately where the transformer is on the production line and the time of delivery.



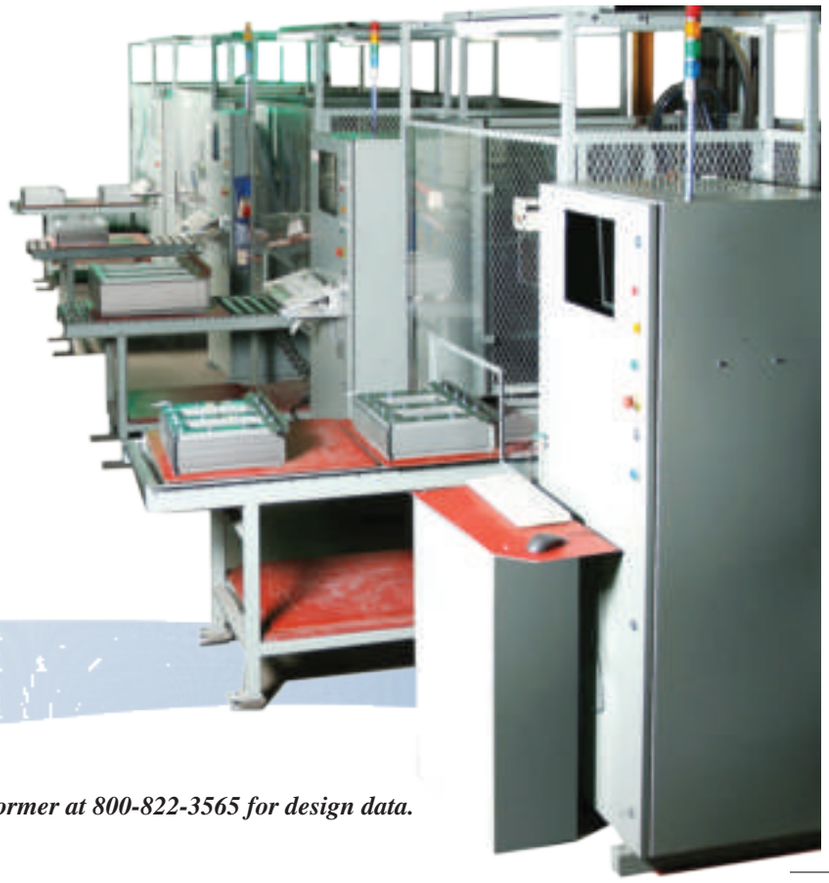




Each production step is scanned and stored in the central database. Automatic test data is also acquired and stored. At every stage your unit is built with the assistance of our unique computer and automated system, which reduces human error and accelerates manufacturing and shipping. Test reports are available on any unit upon request.

ROBOTIC ASSEMBLY

Bemag Transformer is a leader in North America in its use of the latest manufacturing technology. Five robots are used in the manufacturing process.



Robotic assembly:

- Provides the best cut accuracy
- Results in the highest quality transformers
- Keeps the cost of manufacturing low

PRODUCT CODE FOR DISTRIBUTION TRANSFORMERS

EXAMPLE :

Specification : Isolation Copper transformer 75 KVA 3 phase primary 460 VOLTS down to 240/139 VOLTS, K Factor of 13 with electrostatic shield. Connection DELTA –WYE

Product Code is UC3075P460S240K13ES

1. Select Type of Windings

C = Cooper
A = Aluminum

2. Select Type of Phase

1 = 1 Phase Isolation
3 = 3 Phases Isolation
2 = 3 Phases Autotransformer
4 = 1 Phase Autotransformer

3. Select KVA size

75 = 075
100 = 100

4. Select Primary voltage

P460 = letter P + voltage for primary

5. Select Secondary voltage

S240 = letter S + voltage for secondary

6. Select type of connection

Delta / Wye (standard) nothing to write in the product code
Delta / Delta = DD
Wye / Wye = YY

7. Verify the Frequency

Frequency is 60 Hz in North America
Note: Frequency cannot be change with a transformer

8. Verify the Temperature Rise

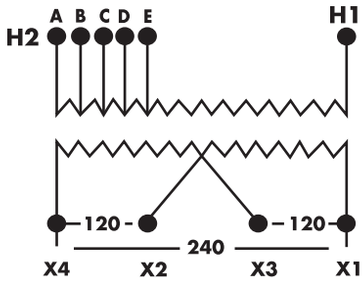
150° C Rise (standard) nothing to write in the product code
115° C Rise = R115
80° C Rise = R80

OPTIONS:

K Factor : K4, K13, K20, K30
ES : Electrostatic Shield ESD: Double Electrostatic Shield
LDB: Reduced sound level
DR : Drive Transformer

1 PHASE ENERGY EFFICIENT

DISTRIBUTION GENERAL APPLICATION



INSULATION CLASS: 220 C • TEMPERATURE RISE: 150 C

VOLTAGE

• Primary: 600 volts • Secondary: 120/240 volts

ALUMINUM 1 PHASE

Primary 600 V Secondary 120/240V

KVA	CODE	INSTALLATION	ENCLOSURE CODE	Weight LBS	Weight KG	Efficiency %
15	UA1015V	floor / wall	BO261515	177	80	97.70
25	UA1025V	floor / wall	BO261515	257	117	98.00
37.5	UA1037V	floor / wall	BO281818	332	151	98.20
50	UA1050V	floor / wall	BO281818	405	184	98.30
75	UA1075V	floor	BO382122	651	296	98.50
100	UA1100V	floor	BO382122	538	245	98.60

COPPER 1 PHASE

Primary 600 V Secondary 120/240V

KVA	CODE	INSTALLATION	ENCLOSURE CODE	Weight LBS	Weight KG	Efficiency %
15	UC1015V	floor / wall	BO261515	208	95	97.70
25	UC1025V	floor / wall	BO261515	229	104	98.00
37.5	UC1037V	floor / wall	BO281818	394	179	98.20
50	UC1050V	floor / wall	BO281818	430	195	98.30
75	UC1075V	floor	BO382122	700	318	98.50
100	UC1100V	floor	BO382122	621	282	98.60

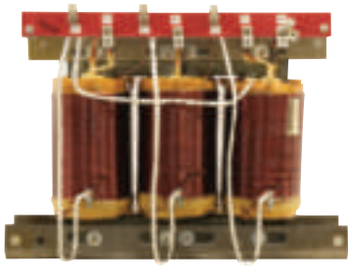
All information is approximate and subject to change without notice.

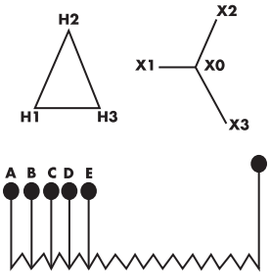
CONNECTOR BY PHASE

KVA	120/240 VOLTS		600 VOLTS		GROUND
15	1	2-14	1	2-14	2-14
25	1	2/0-6	1	2-14	2-14
37.5	1	250 MCM	1	2/0-6	2-14
50	1	350 MCM	1	2/0-6	2/0-6
75	1	500 MCM	1	250 MCM	2/0-6
100	2	350 MCM	1	250 MCM	2/0-6
150	2	500 MCM	1	500 MCM	350 MCM
200	3	500 MCM	1	600 MCM	350 MCM

3 PHASES ENERGY EFFICIENT

DISTRIBUTION GENERAL APPLICATION





INSULATION CLASS: 220 C • TEMPERATURE RISE: 150 C

VOLTAGE

• Primary: 600 volts • Secondary: 120/208 volts

ALUMINUM 3 PHASES

Primary 600 V Secondary 120/208V

KVA	CODE	INSTALLATION	ENCLOSURE CODE	Weight LBS	Weight KG	Efficiency %
15	UA3015V	floor / wall	BO242013	214	97	97.00
30	UA3030V	floor / wall	BO252013	320	145	97.50
45	UA3045V	floor / wall	BO262216	391	178	97.70
75	UA3075V	floor / wall	BO322618	567	258	98.00
112.5	UA3112V	floor	BO382822	875	398	98.20
150	UA3150V	floor	BO382822	1028	467	98.30
225	UA3225V	floor	BO474025	1502	683	98.50
300	UA3300V	floor	BO474025	2011	914	98.60

COPPER 3 PHASES

Primary 600 V Secondary 120/208V

KVA	CODE	INSTALLATION	ENCLOSURE CODE	Weight LBS	Weight KG	Efficiency %
15	UC3015V	floor / wall	BO242013	221	100	97.00
30	UC3030V	floor / wall	BO252013	366	166	97.50
45	UC3045V	floor / wall	BO262216	418	190	97.70
75	UC3075V	floor / wall	BO322618	632	287	98.00
112.5	UC3112V	floor	BO382822	933	424	98.20
150	UC3150V	floor	BO382822	1277	580	98.30
225	UC3225V	floor	BO474025	1890	859	98.50
300	UC3300V	floor	BO474025	2109	959	98.60

CONNECTOR BY PHASE

KVA	120/208 VOLTS		600 VOLTS		GROUND
6	1	2-14	1	2-14	2-14
10	1	2-14	1	2-14	2-14
15	1	2-14	1	2-14	2-14
30	1	2/0-6	1	2-14	2-14
45	1	250 MCM	1	2-14	2-14
50	1	250 MCM	1	2-14	2-14
75	1	350 MCM	1	2/0-6	2/0-6
112,5	1	500 MCM	1	2/0-6	2/0-6
150	2	350 MCM	1	250 MCM	2/0-6
225	2	500 MCM	1	350 MCM	350 MCM
300	3	500 MCM	1	500 MCM	350 MCM

All information is approximate and subject to change without notice.

FULL LOAD AMPERES

TABLE SELECTION SINGLE PHASE

1 PHASE	FULL LOAD AMPERES									
KVA Volts	VOLTAGE									
	120	208	240	347	440	460	480	600	2400	4160
2	17	9.6	8.3	5.8	4.5	4.3	4.2	3.3	0.8	0.5
3	25	14	13	8.6	6.8	6.5	6.3	5.0	1.3	0.7
5	42	24	21	14	11	11	10	8.3	2.1	1.2
7.5	63	36	31	22	17	16	16	13	3.1	1.8
10	83	48	42	29	23	22	21	17	4.2	2.4
15	125	72	63	43	34	33	31	25	6.3	3.6
20	167	96	83	58	45	43	42	33	8.3	4.8
25	208	120	104	72	57	54	52	42	10	6.0
37.5	313	180	156	108	85	82	78	63	16	9.0
50	417	240	208	144	114	109	104	83	21	12
75	625	361	313	216	170	163	156	125	31	18
100	833	481	417	288	227	217	208	167	42	24
167	1392	803	696	481	380	363	348	278	70	40
200	1667	962	833	576	455	435	417	333	83	48
250	2083	1202	1042	720	568	543	521	417	104	60
333	2775	1601	1388	960	757	724	694	555	139	80
500	4167	2404	2083	1441	1136	1087	1042	833	208	120
750	6250	3606	3125	2161	1705	1630	1563	1250	313	180
1000	8333	4808	4167	2882	2273	2174	2083	1667	417	240

$$KVA\ (1PH) = \frac{V \times A}{1000}$$

$$A = \frac{1000 \times KVA\ (1PH)}{V}$$

$$V = \frac{1000 \times KVA\ (1PH)}{A}$$

1 Ø

TABLE SELECTION THREE PHASES (Volts Phase/Phase)

3 PHASES	FULL LOAD AMPERES										
KVA Volts	VOLTAGE										
	208	220	230	240	380	440	460	480	600	2400	4160
3	8.3	7.9	7.5	7.2	4.6	3.9	3.8	3.6	2.9	0.7	0.4
6	17	16	15	14	9.1	7.9	7.5	7.2	5.8	1.4	0.8
9	25	24	23	22	14	12	11	11	8.7	2.2	1.3
10	28	26	25	24	15	13	13	12	9.6	2.4	1.4
15	42	39	38	36	23	20	19	18	14	3.6	2.1
30	83	79	75	72	46	39	38	36	29	7.2	4.2
45	125	118	113	108	68	59	57	54	43	11	6.3
50	139	131	126	120	76	66	63	60	48	12	6.9
75	208	197	188	181	114	99	94	90	72	18	10
112.5	313	296	283	271	171	148	141	135	108	27	16
150	417	394	377	361	228	197	188	181	145	36	21
225	625	591	565	542	342	296	283	271	217	54	31
300	834	788	754	723	456	394	377	361	289	72	42
450	1251	1182	1131	1084	685	591	565	542	434	108	63
500	1390	1314	1257	1204	761	657	628	602	482	120	69
600	1667	1576	1508	1445	913	788	754	723	578	145	83
750	2084	1971	1885	1806	1141	985	942	903	723	181	104
1000	2779	2627	2513	2408	1521	1314	1257	1204	963	241	139

$$KVA\ (3PH) = \frac{V \times A \times \sqrt{3}}{1000}$$

$$A = \frac{1000 \times KVA\ (3PH)}{V \times \sqrt{3}}$$

$$V = \frac{1000 \times KVA}{A \times \sqrt{3}}$$

3 Ø

80 AND 115 TEMPERATURE RISE

Add R80 or R115 in Product Code.

APPLICATION

General application and required where low heat dissipation from the transformer is needed.

DESCRIPTION

Designed to supply a lower temperature rise (operating temperature) in order to give a safety factor on the transformer. This type of transformer is designed oversize.

ADVANTAGES

- Improve life expectancies.
- Cost saving on losses.
- Decrease watts dissipated.
- Substantial increase in overload capacity (20% at 115°C and 35% at 80°C rise).
- High safety factor without increasing cable sizing and protection.

CHARACTERISTICS

- Insulation system 220°C.
- Copper or Aluminum windings.

OPTIONS

- Other voltages.
- K-Factor available.
- Electrostatic shield.
- 50 Hz

COMPARATIVE LOSSES IN %

WITH TEMPERATURE RISE 80°C	-25%
WITH TEMPERATURE RISE 115°C	-15%
WITH TEMPERATURE RISE 150°C	

TOTAL WINDING INSULATION 220°C

AMBIENT 40°C	TEMPERATURE RISE	HOT SPOT 30°C	OVERLOAD CAPABILITY	
AMBIENT 40°C	TEMPERATURE RISE 80°C	HOT SPOT 30°C	OVERLOAD CAPABILITY 35%	80°C
AMBIENT 40°C	TEMPERATURE RISE 115°C	HOT SPOT 30°C	OVERLOAD CAPABILITY 20%	115°C
AMBIENT 40°C	TEMPERATURE RISE 150°C	HOT SPOT 30°C		150°C

AUTOTRANSFORMER

DESCRIPTION

The primary and secondary are connected together on the same winding.
This type of transformer may not be suitable on some power systems which do not have a grounded neutral.

APPLICATION

Frequently used as an economical alternative to general-purpose distribution transformers to adjust the supply voltage and match specific load requirements like electric heating, motor loads of industrial machinery etc…
Usually used as a step-up or step-down transformer

ADVANTAGES

- Low cost.
- Small size.
- Low regulation voltage less than 3%.
- High efficiency.
- Ready to use vs. Buck-Boost.
- Reduce installation time vs. Buck-Boost.
- Balance impedance vs. Buck-Boost.

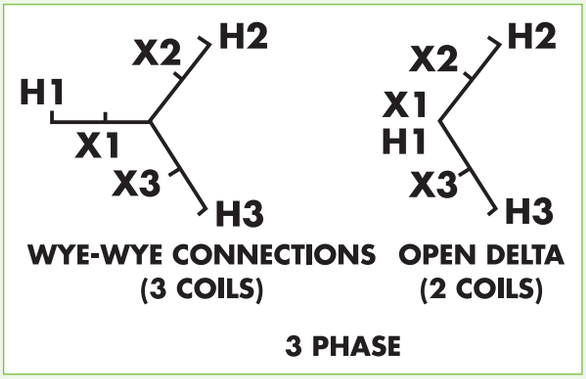
CHARACTERISTICS

- 3 coils design in 3 phases Y – Y connections. (Not open delta) (see diagram)
- May be used as step-up or step down.
- Taps: 1-5% FCAN, 1-5% FCBN.
- Neutral available.
- Copper winding.
- Class 220°C.

OPTIONS

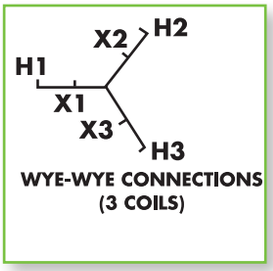
- Custom voltages.
- Single phase 208/240V.
- 80°C and 115°C rise.
- 50 Hz.
- Aluminum winding.

Connexion comparison between Autotransformer with 3 coils (balanced) and 2 coils (unbalanced) design.



AUTOTRANSFORMER

TECHNICAL DATA FOR AUTOTRANSFORMERS



KVA	CODE	MOUNTING	* ENCLOSURE	CONNECTORS	
VOLTAGE PRIMARY : 600 SECONDARY : 480				HV	LV
30	BC2030S480	WALL/FLOOR	BO161612	1 x 2/14	1 x 2/14
45	BC2045S480	WALL/FLOOR	BO161612	1 x 2/14	1 x 2/14
75	BC2075S480	WALL/FLOOR	BO242013	1 x 2/06	1 x 2/06
112	BC2112S480	WALL/FLOOR	BO262216	1 x 2/06	1 x 250 MCM
150	BC2150S480	WALL/FLOOR	BO262216	1 x 250 MCM	1 x 250 MCM
225	BC2225S480	WALL/FLOOR	BO322618	1 x 350 MCM	1 x 500 MCM
300	BC2300S480	WALL/FLOOR	BO322618	1 x 500 MCM	2 x 350 MCM
400	BC2400S480	FLOOR	BO382822	2 x 350 MCM	2 x 350 MCM
500	BC2500S480	FLOOR	BO382822	2 x 350 MCM	2 x 500 MCM
600	BC2600S480	FLOOR	BO382822	2 x 500 MCM	3 x 500 MCM
VOLTAGE PRIMARY : 600 SECONDARY : 240				HV	LV
30	BC2030S240	WALL/FLOOR	BO242013	1 x 2-14	1 x 2/0-6
45	BC2045S240	WALL/FLOOR	BO242013	1 x 2-14	1 x 2/0-6
75	BC2075S240	WALL/FLOOR	BO262216	1 x 2/0-6	1 x 250 MCM
112	BC2112S240	WALL/FLOOR	BO322618	1 x 2/06	1 x 500 MCM
150	BC2150S240	FLOOR	BO382822	1 x 250MCM	2 x 350 MCM
225	BC2225S240	FLOOR	BO382822	1 x 350MCM	2 x 500 MCM
300	BC2300S240	FLOOR	BO382822	1 x 500MCM	3 x 500 MCM
400	BC2400S240	FLOOR	BO474025	2 x 350MCM	3 x 600 MCM
500	BC2500S240	FLOOR	BO474025	2 x 350MCM	4 x 500 MCM
600	BC2600S240	FLOOR	BO474025	2 x 500MCM	5 x 600 MCM

DRIVE ISOLATION TRANSFORMER

All our drive transformers meet the Energy Efficient C802,2 and NEMA TP1.

DESCRIPTION

Drive isolation transformers are built for establishing transformer capability when submitted to non-sinusoidal load currents created by AC and DC variable drives.

ADVANTAGES

- Separate primary and secondary windings—Creates electrical isolation between the incoming line and the SCR load
- Windings are designed to withstand overload current for specified time periods

APPLICATION

Used to power AC drives and DC adjustable speed drive systems that use Silicone Controlled Rectifiers (SCR).

STANDARD CHARACTERISTICS

- 150°C rise.
- Copper windings.
- K4 Factor standard.
- Epoxy impregnated.
- Delta-Wye or Delta-Delta connection.
- Taps: 2 - 2½% FCAN, 2 - 2½% FCBN.
- Internally braced for short-circuit stress protection.
- Low flux density design to minimize core saturation due to harmonics generated by the rectifiers.
- Better voltage regulation with low impedance.

OPTIONS

- 80°C and 115°C rise.
- Custom voltages.
- Electrostatic shield available.
- Core & coil available.
- Aluminum winding.
- Thermal switch, one or three sensors.
- K Factor up to 30
- 50 Hz.

TECHNICAL DATA FOR DRIVE TRANSFORMERS

Drive isolation transformer are sized to match standard motor horsepower ratings.
See table below.

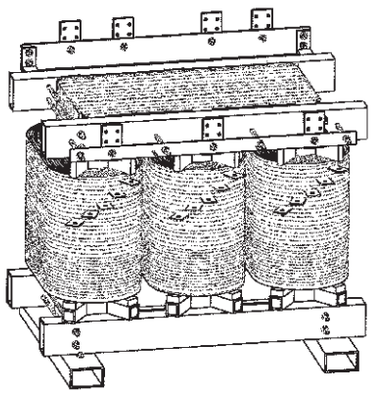
3 PHASES HP	COPPER KVA	CODE	INSTALLATION	* ENCLOSURE
2	3	UC3003...DR	WALL/ FLOOR	BO161612
3	5	UC3005...DR	WALL/ FLOOR	BO161612
5	7.5	UC3007...DR	WALL/ FLOOR	BO161612
7.5	11	UC3011...DR	WALL/ FLOOR	BO161612
10	14	UC3014...DR	WALL/ FLOOR	BO242013
15	20	UC3020...DR	WALL/ FLOOR	BO252013
20	27	UC3027...DR	WALL/ FLOOR	BO262216
25	34	UC3034...DR	WALL/ FLOOR	BO262216
30	40	UC3040...DR	WALL/ FLOOR	BO262216
40	51	UC3051...DR	WALL/ FLOOR	BO322618
50	63	UC3063...DR	WALL/ FLOOR	BO322618
60	75	UC3075...DR	WALL/ FLOOR	BO322618
73	93	UC3093...DR	FLOOR	BO322618
100	118	UC3118...DR	FLOOR	BO382822
125	145	UC3145...DR	FLOOR	BO382822
150	175	UC3175...DR	FLOOR	BO382822
200	220	UC3220...DR	FLOOR	BO474025
250	275	UC3275...DR	FLOOR	BO474025
300	330	UC3330...DR	FLOOR	BO474025
400	440	UC3440...DR	FLOOR	BO564430
500	550	UC3550...DR	FLOOR	BO625135
600	660	UC3660...DR	FLOOR	BO726240

EXAMPLE PART #: UC3007P575S240DR

All information is approximate and subject to change without notice.

For other voltages and KVA sizes contact BEMAG TRANSFORMERS

* See enclosure section.



SPECIAL VOLTAGE COMBINATIONS AVAILABLE	
PRIMARY VOLTAGE	SECONDARY VOLTAGE
600	600/347
575	575/332
550	550/318
480	480/277
460	460/266
440	440/254
400	400/231
380	380/220
240	240/139
230	230/133
220	220/127
208	208/120

K FACTOR TRANSFORMERS

DESCRIPTION

The K FACTOR TRANSFORMER is an isolating transformer that can handle 100% of load plus the harmonics load without overheating.
The losses generated by the harmonics can be calculated by multiplying the K factor by the stray losses.

The K FACTOR is derived from a mathematical formula, which states that the eddy current losses in a transformer will be increased in direct proportion to the sum of the percentage current at a given harmonic level multiplied by the square of the harmonic order.

ADVANTAGES

- Prevent the overheating of the transformer by increasing the stray losses with a K factor.
- Prevent neutral overheating by over sizing it at 200%.
- More efficient

APPLICATION

The K FACTOR TRANSFORMER is used for non-linear loads.
With the arrival of computers, faxes, printers and variable speed drives
in modern business centres and industries, we encounter harmonic problems.

CHARACTERISTICS

- Reduction of skin effects by using multiple conductors of thinner dimensions.
- Copper winding.
- Taps: 2-2 1/2% FCAN, 2-2 1/2% FCBN.
- Delta-Wye connection standard.
- 150°C temperature rise.
- Insulation class 220°C.
- Enclosure type Nema 3R.
- Proper axial height of the winding. (less than 15% between the primary and secondary winding).
- Low flux density in high grain oriented steels.
- Oversize neutral (200%) conductor.

OPTIONS

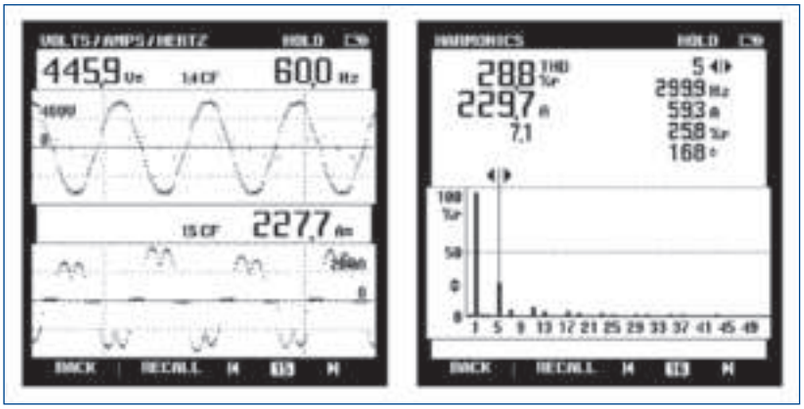
- Multiple electrostatic shields.
- Aluminum winding.
- 80°C and 115°C temperature rise available.
- Factor of K4, K13, K20 and K30 is available.
- Nema 4.
- 50 Hz.
- Thermometer.
- TVSS.

K-1	- Standard transformer - Standard lighting - Motors
K-4	- Induction heater - SCR - AC Drive
K-8	- DC Drive
K-13	- School pulse lighting - Hospital
K-20	- Data processing computer - Computer room

K FACTOR TRANSFORMERS

MEASUREMENT EXAMPLE

Harmonics on the secondary of a Transformer for DC Drive.
For this application a K factor of 8 will be the minimum.



TECHNICAL DATA FOR K FACTOR TRANSFORMERS

KVA	CODE	MOUNTING	WEIGHT		* ENCLOSURE
			LBS	KGS	
Factor 600-120/208					
15	UC3015VK4	Wall/Floor	209	95	BO242013
30	UC3030VK4	Wall/Floor	366	166	BO252013
45	UC3045VK4	Wall/Floor	460	209	BO262216
75	UC3075VK4	Wall/Floor	680	309	BO322618
112	UC3112VK4	Floor	876	398	BO382822
150	UC3150VK4	Floor	1144	518	BO382822
225	UC3225VK4	Floor	1822	828	BO474025
300	UC3300VK4	Floor	2161	982	BO474025
Factor K13, 600-120/208					
15	UC3015VK13	Wall/Floor	240	109	BO242013
30	UC3030VK13	Wall/Floor	398	181	BO262216
45	UC3045VK13	Wall/Floor	490	223	BO262216
75	UC3075VK13	Floor	683	310	BO322618
112	UC3112VK13	Floor	1065	484	BO382822
150	UC3150VK13	Floor	1336	607	BO382822
225	UC3225VK13	Floor	1924	875	BO474025
300	UC3300VK13	Floor	2312	1051	BO474025

All information is approximate, and subject to change without notice.
For other voltages and KVA sizes contact BEMAG.
* See enclosure section.

HARMONIC MITIGATING TRANSFORMERS (0°-30°)

DESCRIPTION

The Harmonic Mitigating transformer is a three phase transformer with 0° or -30° displacement between the primary and the secondary with multi winding connections.

ADVANTAGES

- Used alone reduces the third harmonics (3rd , 9th , 15th , 21st ...).
- Used together reduces the 5 th and 7 th harmonics on the primary side.

APPLICATION

The Harmonic Mitigating transformer (0° or -30°) is used to reduce current harmonics on the primary side of a transformer and reduce the voltage distortion on the load.
The Harmonic Mitigating transformer reduces the 3 rd harmonics and 9th , 15th , 21st on the primary side.
Used together on the same power line the zig-zag 0° and the zig-zag -30° will reduce the
5th and 7th harmonic on the primary side.

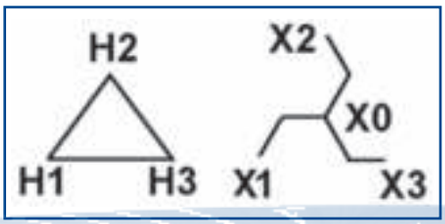
CHARACTERISTICS

- Copper winding.
- K13 Factor standard.
- Taps: 2-2 1/2% FCAN, 2-2 1/2% FCBN.
- Delta-ZIG-ZAG connection.
- 150°C temperature rise.
- Insulation class 220°C.
- Neutral size for 200% capacity.
- 0°, -30° phase shift.

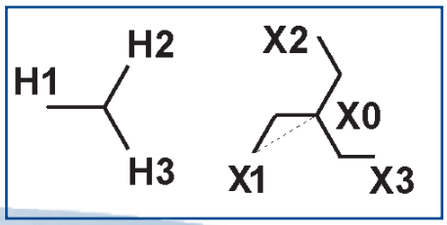
OPTIONS

- Single or Multiple electrostatic shield.
- Enclosure Nema 4.
- Aluminum winding.
- 80°C and 115°C temperature rise available.
- TVSS.
- Temperature sensor.
- K Factor higher than 13.
- Double output ([0°, - 30°] or [-15°, + 15°]) on same transformer.
- 50 Hz.

Zig-Zag 0°



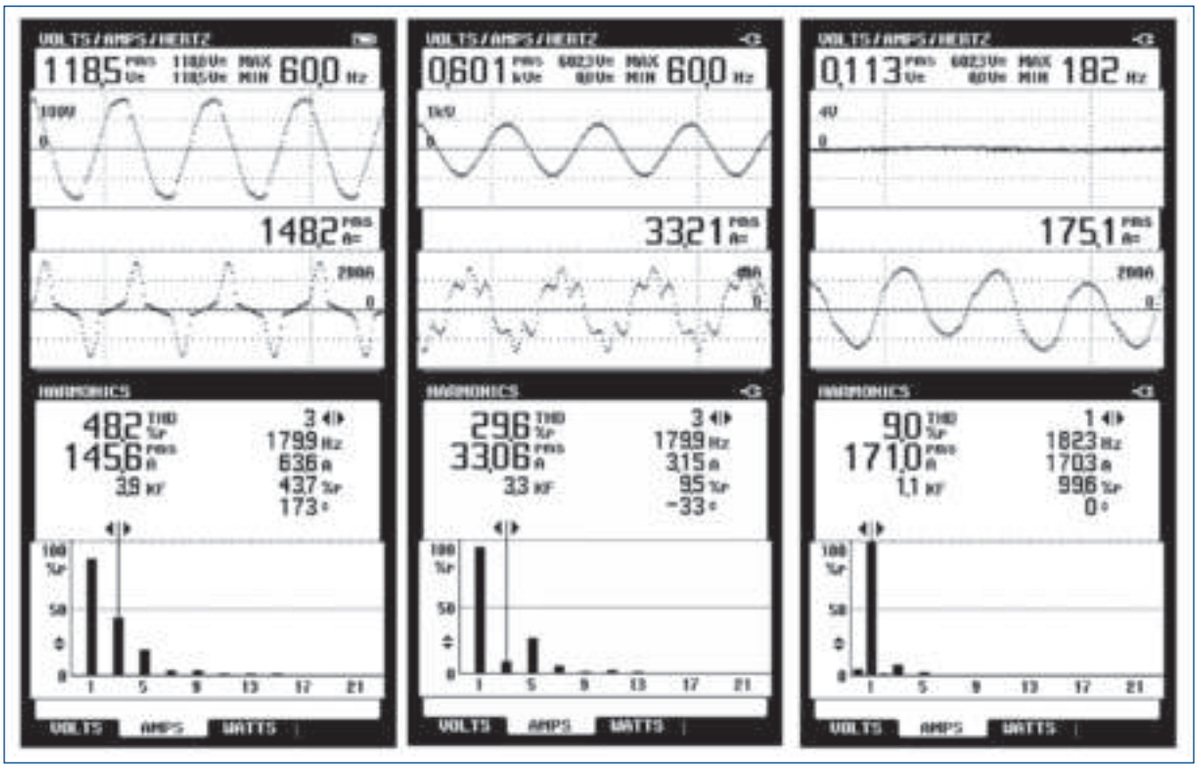
Zig-Zag -30°



HARMONIC MITIGATING TRANSFORMERS (0°-30°)

MEASUREMENT EXAMPLE

Harmonics on a Transformer with Zigzag secondary; the load is mainly computers.
On secondary the 3 rd harmonic is 43.7% of the total amperage and reduce to 9.5% on the primary.
The current on the Neutral is 175.1 Amps or 118% of the current of the secondary and mostly 3 rd harmonics.



TECHNICAL DATA FOR HARMONIC MITIGATING TRANSFORMERS SINGLE OUTPUT

COPPER 3 PHASES (units are inches)				0° PHASE DISPLACEMENT		
CODE	KVA	HEIGHT	WIDTH	DEPTH	WEIGHT (lbs)	* ENCLOSURE
UC3015VZZ	15	24	20	13	201	BO242013
UC3030VZZ	30	27	23	16	395	BO262216
UC3045VZZ	45	27	23	16	524	BO262216
UC3075VZZ	75	32	26	18	858	BO322618
UC3112VZZ	112.5	38	30	25	910	BO382822
UC3150VZZ	150	38	30	25	1241	BO382822
UC3225VZZ	225	47	40	25	1577	BO474025
UC3300VZZ	300	47	40	25	2148	BO474025

All information is subject to change without notice.
* See enclosure section.
** For -30° phase displacement add 30 at the code number Ex: UC3015VZZ30
*** For tranformer with dual secondary 0° -30° ZZD contact factory

ENCAPSULATED TRANSFORMERS

DESCRIPTION

The encapsulated transformer is a transformer built with a mixture of silica sand and resin that forms a mass surrounding the core and coils. Bemag's epoxy potted line are certified for class 1 Div 2 environment.

ADVANTAGES

- Quiet operation.
- Core and coils are protected against moisture and contamination.

APPLICATION

The encapsulated transformers are ideal when the following conditions are present: humidity, corrosive fumes or dust.

ENVIRONMENTS

- Humid: mines and marine applications.
- Dusty: textiles and woodworking industries.
- Corrosive: pulp & paper, steel mills and petrochemical plants.
- Hazardous environment (class 1 Div 2)

CHARACTERISTICS

- Copper winding.
- Taps: 2-2 1/2% FCAN, 2-2 1/2% FCBN.
- Insulation class 200°C.
- Temperature rise: 115°C.
- Three phase up to 75 KVA.
- Single phase up to 50 KVA.
- Nema 4 enclosure standard, sprinkler proof.
- Suitable for both indoor and outdoor use.

OPTIONS

- 80°C - 55°C..
- 50 Hz.

TECHNICAL DATA FOR ENCAPSULATED TRANSFORMERS

KVA	CODE	MOUNT	DIMENSIONS			WEIGHT	
			HEIGHT	WIDTH	DEPTH	LBS	KG
1 PHASE 600-120/240							
3	BC1003VEPHZ	Wall/Floor	11.5	10	14	153	70
5	BC1005VEPHZ	Wall/Floor	11.5	10	14	136	62
7.5	BC1007VEPHZ	Wall/Floor	11.5	10	14	201	91
10	BC1010VEPHZ	Wall/Floor	11.5	10	14	288	131
15	BC1015VEPHZ	Wall/Floor	18	12	16	334	152
25	BC1025VEPHZ	Wall/Floor	18	12	16	510	232
37.5	BC1037VEPHZ	Floor	23	15	18	773	351
50	BC1050VEPHZ	Floor	23	15	18	1074	488
3 PHASES 600-120/208							
6	BC3006VEPHZ	Wall/Floor	14	15	14	230	105
10	BC3010VEPHZ	Wall/Floor	14	15	14	324	147
15	BC3015VEPHZ	Wall/Floor	14	15	14	465	211
30	BC3030VEPHZ	Wall/Floor	16	18	16	914	415
45	BC3045VEPHZ	Floor	21	18	18	942	428
75	BC3075VEPHZ	Floor	22	22	20	1830	832

All information is subject to change without notice.
For other voltages and KVA sizes contact BEMAG.

MEDIUM VOLTAGE TRANSFORMERS

COILS

Disk design or layer type high voltage windings split in 2 or 3 sections in order to reduced stress. Windings are copper or aluminum.

Design with maximum cooling characteristics. Strip winding on low voltage coils to minimize short circuit forces.

The Core and coil are isolated with neoprene pads in order to reduce vibration & noise. Heavy gauge sheet steel construction.

OPTION

- Digital thermometer.
- Coordination
- Electrostatic shielding.
- K factors up to 30.
- Core & coil or with enclosure.
- Mine duty application.
- Frequency 50 hz
- Lightning arrestor
- Grounding resistor
- Thermometer
- Fans

INSULATION

The Class "H", 220° insulation system is used on all transformers. Epoxy coated to permit extra bonding to prolong life of the core and coil assembly. Basic impulse level of 20 and 30 kv B.I.L.. Standard impedance between 4 to 7%.

BEMAG transformer produces high quality industrial medium power transformers with voltages up to 4160 Volts. These transformers are available in sizes ranging from 30 to 4000 kva with enclosure or core and coil assemblies.

Primary voltage: 4160 and 2400 Volts

Secondary voltage: 208, 240, 460, 480 and 600 Volts.

COPPER 1 PHASE					DIMENSION WITH ENCLOSURE						DIMENSION (CORE & COIL)					
KVA	CODE	IMP.	WEIGHT		HEIGHT • A		WIDTH • B		DEPTH • C		HEIGHT • A		WIDTH • B		DEPTH • C	
		%	LBS	KG	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
20	UC1020P..	4.3	430	195	40	1016	26	660	26	660	19	483	18	457	16	406
30	UC1030P..	5.9	459	208	40	1016	26	660	26	660	22	559	19	483	16	406
50	UC1050P..	5.3	624	283	40	1016	26	660	26	660	24	610	21	533	18	457
75	UC1075P..	6.6	861	391	56	1422	44	1118	30	762	22	559	22	559	20	508
100	UC1100P..	6.9	1065	483	56	1422	44	1118	30	762	30	762	24	610	20	508
200	UC1200P..	4.2	1690	767	56	1422	44	1118	30	762	38	965	26	660	22	559
300	UC1300P..	6.9	1953	886	56	1422	44	1118	30	762	39	991	30	762	23	584

COPPER 3 PHASES					DIMENSION WITH ENCLOSURE						DIMENSION (CORE & COIL)					
KVA	CODE	IMP.	WEIGHT		HEIGHT • A		WIDTH • B		DEPTH • C		HEIGHT • A		WIDTH • B		DEPTH • C	
		%	LBS	KG	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM
30	UC3030P..	4.5	692	314	47	1194	40	1016	25	635	22	559	29	737	16	406
45	UC3045P..	4.4	807	366	47	1194	40	1016	25	635	23	584	31	787	18	457
75	UC3075P..	5.9	983	446	56	1422	44	1118	30	762	24	610	33	838	20	508
1125	UC3112P..	4.3	1336	606	56	1422	44	1118	30	762	28	711	35	889	20	508
150	UC3150P..	4.1	1573	714	56	1422	44	1118	30	762	30	762	35	889	22	559
300	UC3300P..	5.1	2450	1111	62	1575	50	1270	35	889	38	965	38	965	25	635
450	UC3450P..	6.4	3300	1497	62	1575	50	1270	35	889	38	965	45	1143	26	660
500	UC3500P..	7.1	3416	1549	62	1575	50	1270	35	889	38	965	45	1143	28	711
600	UC3600P..	7.5	4062	1842	72	1949	62	1575	40	1016	41	1041	46	1168	30	762
750	UC3750P..	6.9	4940	2241	72	1949	62	1575	40	1016	42	1067	50	1270	30	762
1000	UC31000P..	6	6120	2776	72	1949	62	1575	40	1016	55	1397	50	1270	30	762
1250	UC31250P..	6.7	7010	3180	80	2166	68	1841	48	1219	55	1397	55	1397	32	813
1500	UC31500P..	8.6	9035	4098	80	2166	68	1841	48	1219	60	1524	57	1448	35	889

** All informations are approximate, and subject to change without notice.

POWER TRANSFORMERS

The BEMAG dry type power transformer is appropriate for industrial and commercial high voltage applications (up to 35 KV). Dry type power transformer can be installed near the load center which is impossible for a liquid filled transformer. Therefore, installation costs are greatly reduced. Other advantage of dry type power transformer is that the material used is flame retardant. Thereby, risk of fire is lower and this alternative is environmentally safer. Our custom C-A-D (computer-assisted-design) software optimizes the technical designs to meet the most stringents specifications for dry type power transformer. Our conception provides an excellent voltage regulation and low losses which results in a longer lifetime and annual savings.

ADVANTAGES

COIL

- Coils are layer, disk or section windings depending on the voltage class.
- All windings coils, designed with wire or foil conductors which minimize Eddy losses and provide the highest short circuit strength.

CORE

- The core consists of high quality cold rolled oriented grain steel with low specifics losses.
- Core laminations are free of burrs and stacked without gaps.
- Uniform pressing and stiffness ensure a low noise level.

ASSEMBLING

- The coils are held rigidly in place between high compression insulators for the highest ability to resist short circuit forces.
- Low voltage bus bars bolted to the upper and lower core clamps with standoff insulators.

V.P.I. PROCESS (VACUUM PRESSURE IMPREGNATION)

- Each BEMAG power transformer coil is impregnated using the V.P.I. process to ensure that the impregnated materials can penetrate the windings thoroughly. This way each transformer offers the highest mechanical strength and rapid heat dissipating, this step prolongs life expectancy.

POWER TRANSFORMERS

CHARACTERISTICS

- 5 KV Class 150 KVA - 4 000 KVA
  15 KV Class 150 KVA - 5 000 KVA
  25 KV Class 300 KVA - 5 000 KVA
  35 KV Class 500 KVA - 5 000 KVA
- Up to 35 000 volts.
- Insulation Class "H", 220°C used on all transformers with standard 150°C rise.
- Frequency: 60 Hz.
- Energy efficient (C-802.2 or TP1).
- Taps: 4 taps at 2.5%, 2 over, and 2 under rated voltage.
- Impedance & Audible sound level designed to CSA C9 and C22.2-47 standard.

OPTIONS

- Copper or Aluminum windings.
- Electrostatic shield (s).
- Temperature rise: 80°C and 115°C.
- Frequency: 50 Hz.
- Terminals with flexible connectors.
- Lightning arrestors.
- Grounding resistor.
- Forced air cooling fans.
- Fan provisions.
- Digital thermometer.
- Enclosure NEMA 3R.
- Custom coordination.

STANDARD PRODUCTION TEST

All Power Transformers tested in accordance with the CSA standards.

- Winding resistance measurements.
- Voltage ratio measurements.
- Polarity.
- Exciting current.
- Core loss.
- Load loss and Impedance voltage.

TYPE TEST / OPTIONAL TEST

- Heat test.
- Sound level.
- Basic impulse level (BIL).

ENCLOSURE & Options (antivibration pads and wall mounting Brackets)

CODE #	Height	Width	Depth	Mounting type	Wall Mounting Kit #	Anti Vibration Pads	NEMA	FIGURE #
BO161612	16	16	12	Floor & Wall	N/A	VP23	2	1
BO181712	18	17	12	Floor & Wall	N/A	VP23	2	1
BO242013	27.5	20	13	Floor & Wall	MK242013	VP23	3R	2
BO252013	28.5	20	13	Floor & Wall	MK252013	VP23	3R	2
BO262216	29.5	22	16	Floor & Wall	MK262216	VP23	3R	2
BO322618	35.5	26	18	Floor & Wall	MK322618	VP23	3R	2
BO382822	41.5	28	22	Floor	N/A	VP33	3R	2
BO474025	50.5	40	25	Floor	N/A	VP43	3R	3
BO121010	12	10	10	Floor & Wall	N/A	VP23	2	1
BO161112	16	11	12	Floor & Wall	N/A	VP23	2	1
BO261515	29.5	15	15	Floor & Wall	MK261515	VP23	3R	2
BO281818	31.5	18	18	Floor & Wall	MK281818	VP23	3R	2
BO382122	41.5	21	22	Floor	N/A	VP33	3R	2
BO402626	43	26	26	Floor	N/A	VP43	1	4

All informations is approximate and subject to change without notice.

FIGURE 1

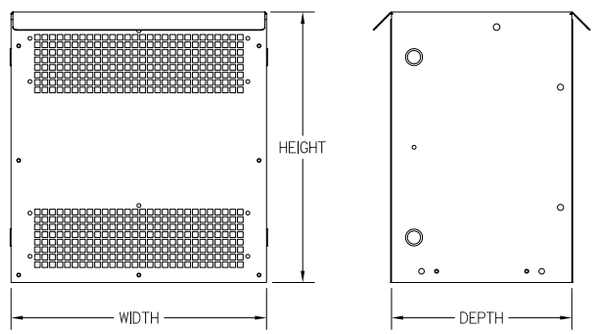


FIGURE 2

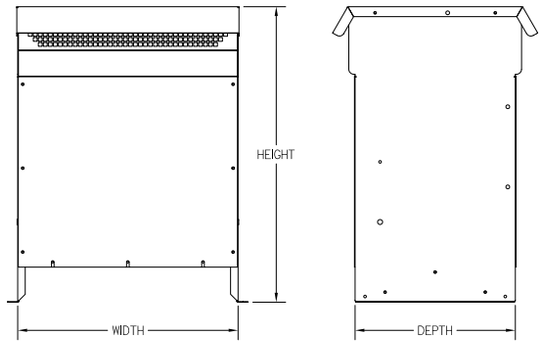


FIGURE 3

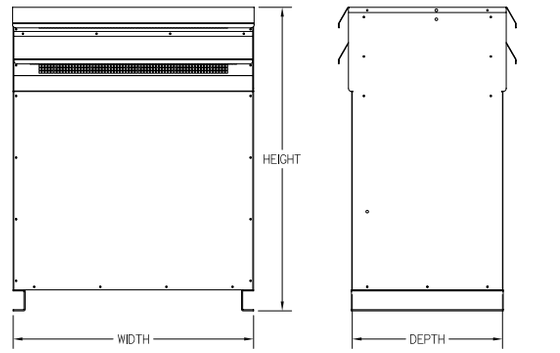
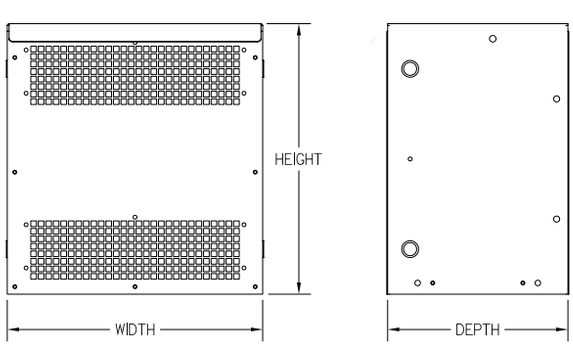


FIGURE 4

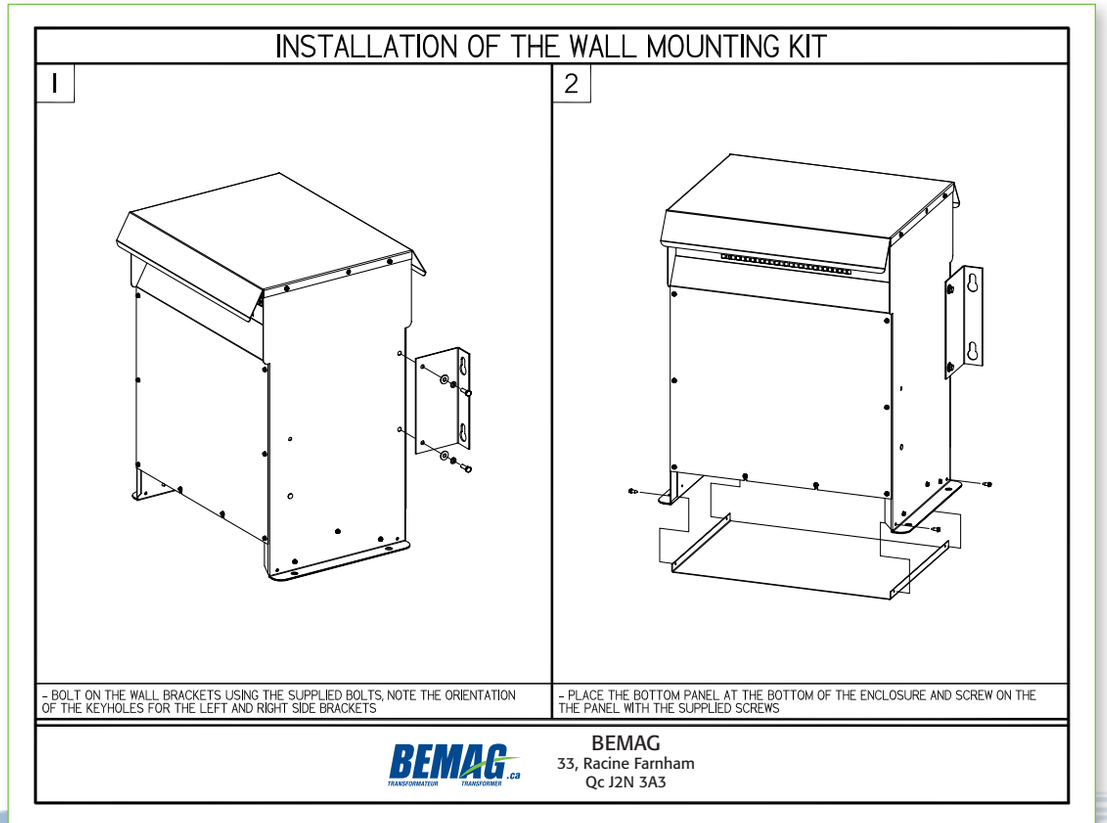


ENCLOSURE & OPTIONS

BRACKET INSTALLATION ON WALL/FLOOR MOUNTING

Nema 3R

- Ventilated enclosure
- Drops, dripping.
- Small splashes of non corrosive liquids.
- Sprinkler proof.
- Rain, snow and external formation of ice.



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